

REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application.

Claims 28-33, 51, 52 and 54-58 are now present in this application. Claims 28 and 51 are independent. Claims 35-50 have been withdrawn from consideration.

Amendments have been made to the Title, Abstract of the Disclosure and specification, claims 34-50, 53 and 59 have been canceled without prejudice or disclaimer, and claims 28 and 51 have been amended. No new matter is involved. Reconsideration of this application, as amended, is respectfully requested.

Priority Under 35 U.S.C. § 119

Applicants thank the Examiner for acknowledging Applicants' claim for foreign priority under 35 U.S.C. §119, and receipt of the certified priority documents.

Information Disclosure Citation

Applicants thank the Examiner for considering the reference supplied with the Information Disclosure Statement filed April 18, 2003, and for providing Applicants with an initialed copy of the PTO-1449 form filed therewith.

The Examiner has not provided Applicants with an indication that he has reviewed the copy of co-pending Application No. 09/823,122, filed April 11, 2001, believed to be pending in Patent examining Group 1725, a copy of which was filed in this Application pursuant to MPEP 2001.06(b) on April 30, 2004. An indication that this co-pending Application has been reviewed is respectfully requested from the Examiner in the next Office Action.

Restriction Requirement

The Examiner has made a Restriction Requirement, and has withdrawn claims 35-50 from further consideration. By this Amendment, Applicants have canceled non-elected claims 35-50. Applicants reserve the right to file a divisional application directed to claims 35-50 at a later date if so desired.

Title of the Invention

Applicants have amended the Title of the Invention in order to better reflect the subject matter claimed.

Abstract of the Disclosure

Applicants have amended the Abstract of the Disclosure in order to place it in better form. In this regard it is noted that the Abstract concerns the disclosed invention and is not limited to the claimed invention. Accordingly, the Abstract

still refers to the disclosed methods as well as to related devices and systems. In this regard, please note that MPEP 608.01(b) clearly states that the purpose of the abstract is to enable the United States Patent and Trademark Office and the public generally to determine quickly from a cursory inspection the nature and gist of the technical disclosure and will not be used for interpreting the scope of the claims.

Objection to the Abstract of the Disclosure

The Examiner has objected to the Abstract of the Disclosure because the claimed invention is a method for plugging holes in a printed circuit board, and is not a device.

Applicants respectfully traverse this objection. In order to overcome this objection, as pointed out above, the Abstract is properly directed to the disclosure and is not to be used in interpreting the claims. Applicants have only amended the Abstract of the Disclosure to make it read better. Accordingly, reconsideration and withdrawal of this objection are respectfully requested.

Specification Objection

The Examiner has objected to the specification because of a typographical error and asks that any informalities be corrected. In order to overcome this objection, Applicants have amended the specification in order to correct the

deficiency pointed out by the Examiner, and corrected the grammar of another paragraph. Reconsideration and withdrawal of this objection are respectfully requested.

Specification Amendments

Applicants have amended the specification in order to correct the aforementioned minor typographical error, and to place the specification in better form.

Rejection Under 35 U.S.C. §112, 2nd Paragraph

Claims 28-34 and 51-59 stand rejected under 35 U.S.C. §112, 2nd Paragraph. This rejection is respectfully traversed.

The Examiner alleges that claims 28 and 51 do not clearly describe the steps of those method claims in the sense that there are no positive steps in the claims to carry out the claimed invention.

In order to overcome this rejection, Applicants have amended claims 28 and 51 to use the active voice instead of the passive voice, thereby positively reciting method steps. Applicants respectfully submit that the claims, as amended from the passive voice to the active voice, particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

The Office Action also objects to the use or alternative expressions "or" and "and/or" in various claims, alleging that it is uncertain which probabilities of the steps of the claimed invention are carried.

MPEP 2173.05(h), section II clearly authorizes use of alternative features in claims, by stating, "Alternative expressions using "or" are acceptable, such as "wherein R is A, B, C, or D." The following phrases were each held to be acceptable and not in violation of 35 USC §112, second paragraph in In re Gaubert, 524 F.2d 1222, 187 USPQ 664 (CCPA 1975): "made entirely or in part of"; "at least one piece"; and "iron, steel or any other magnetic material."

Claim 28's recitation of "solder resist or insulating resin" is of the same type as the approved "iron, steel or any other magnetic material." Claim 52's and claim 55's recitation of "and/or one or more through holes" is perfectly clear in meaning and covers a variety of printed circuit board configurations. The method steps recited in these claims are the same regardless of which alternative printed circuit board configurations are employed.

Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Rejection Under 35 U.S.C. §102

Claims 28, 29, 33, 34, 51-54, 58 and 59 stand rejected under 35 U.S.C. §102(b) as being anticipated by JP10-219,237 to Miura et al. (hereinafter, "Miura").

This rejection is respectfully traversed.

A complete discussion of the Examiner's rejection is set forth in the Office Action, and is not being repeated here.

Initially, Applicants note that the rejection is moot with respect to canceled claims 34, 53 and 59.

Applicants have obtained a computer generated English language translation of this reference from the Japanese Patent Office website and provide it for the use of the Examiner. Applicants do not vouch for the accuracy of the translation, but supply it in the interest of completeness, as "Exhibit A."

Miura appears to be directed to removing big air bubbles, and resulting deleterious effects that they cause, from the solder resist in the holes of his printed circuit board. Miura apparently accomplishes this by limiting the cellular size of the holes to 100 microns or less, and preferably to 50 microns or less and more preferably to 30 microns or less. Reference is made to pages 1-4 of the "detailed Description" of the JPO English language computer generated translation.

Miura does not disclose the claimed invention recited in independent claims 28 and 51. For example, Miura does not disclose filling the spaces among the side surface patterns to the same height as the upper surface of the circuit patterns. All

that Miura discloses is that “the printing paste is charged into via hole uniformly.” Applicants respectfully disagree with the assertion that Fig. 1 shows the solder resist filled to the same height as the upper surface of the circuit patterns. For example, element 4 is disclosed in the computer generated JPO English language translation as an outer layer conductor. As disclosed in the English language abstract of Miura, a printing pattern is formed on printing plate 11. The printed paste is then cured to form a solder resist pattern 7-1, and solder resist portions 7-2 and 7-3 that have filled holes. Only then is paste 7-0 applied onto the board forward with the squeegee 9 and backward with the squeegee 8 so that the printing paste is charged into the via hole uniformly. It appears to Applicants that the resist material is filled to a level above the top of outer layer conductor 4, i.e., to the level of the cured solder resist pattern 7-1.

Accordingly, independent claims 28 and 51 are not anticipated by Miura, which positively recite that the solder resist or insulating resin filled in the spaces among the surface side patterns is filled to the same height as the upper surface of the circuit patterns (or first circuit patterns). Moreover, because claims 29 and 33 depend from claim 28 and because claims 52, 54 and 58 depend from claim 51, and contain all the features of those respective independent claims, claims 29, 33, 52, 54 and 58 are also not anticipated by Miura.

Accordingly, reconsideration and withdrawal of the rejection of claims 28, 29, 33, 34, 51-54, 58 and 59 under 35 USC 102(b) as anticipated by Miura is respectfully requested.

Rejections under 35 U.S.C. §103

Claims 30-32 and 55-57 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Miura in view of U.S. Patent 6,276,055 to Bryan et al. (hereinafter, "Bryan"). These rejections are respectfully traversed.

Complete discussions of the Examiner's rejections are set forth in the Office Action, and are not being repeated here.

Miura does not disclose or suggest the claimed invention at least for the reasons stated above. Bryan is not applied to provide the features missing in Miura. Bryan is only applied to teach plural squeegee strokes to fill the vias.

So, even if Miura were modified to use plural squeegee strokes, Miura would still not disclose or render obvious the claimed invention.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of the claimed invention, this rejection is improper and should be withdrawn.

Additional Cited References

Since the remaining references cited by the Examiner have not been utilized to reject the claims, but have merely been cited to show the state of the art, no comment need be made with respect thereto.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Robert J. Webster, Jr., Registration No. 46,472, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

Application No.: 10/043,146
Art Unit: 3729

Attorney Docket No. 0630-1402P
Reply to March 1, 2004 Office Action
Page 18

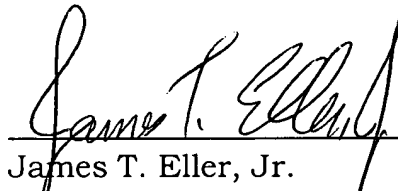
Applicants respectfully petition under the provisions of 37 C.F.R. §1.136(a) and § 1.17 for a one-month extension of time in which to respond to the Examiner's Office Action. The Extension of Time Fee in the amount of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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JTE/RJW/adt 

Attachments: Abstract of the Disclosure
Exhibit A - English translation of JP10-219237 to Miura et al.